

The Economics of Markets

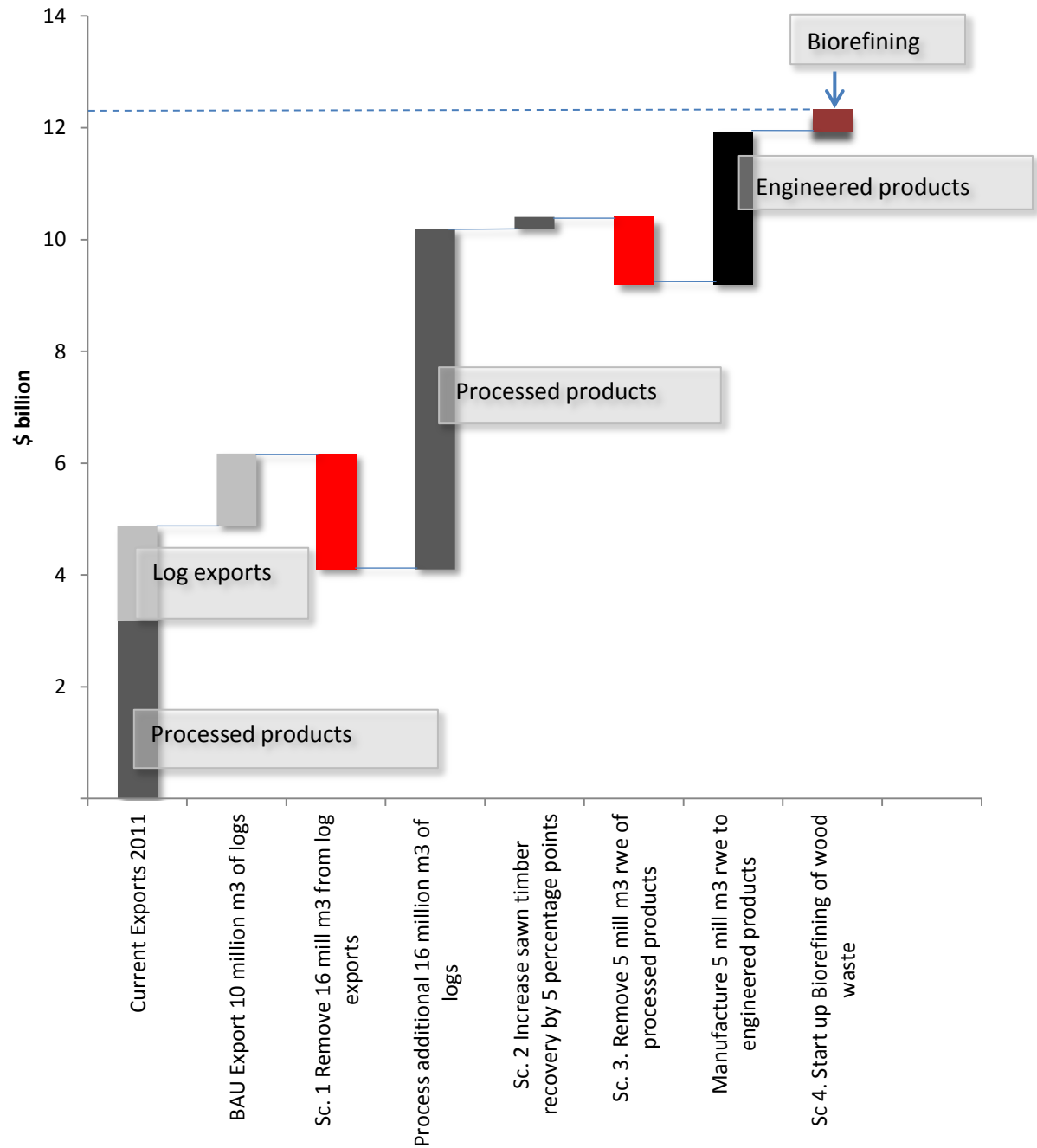


David Evison
School of Forestry,
University of Canterbury

Woodco goals

- An earlier Woodco Strategy study said

“...Lack of scale and current levels of productivity are significant barriers to investment in the wood processing industry. An economic analysis of wood processing and value-adding in New Zealand needs to be undertaken, along with a realistic look at what forms of new processing and expansion of existing plants would feasibly work...”



Making it happen

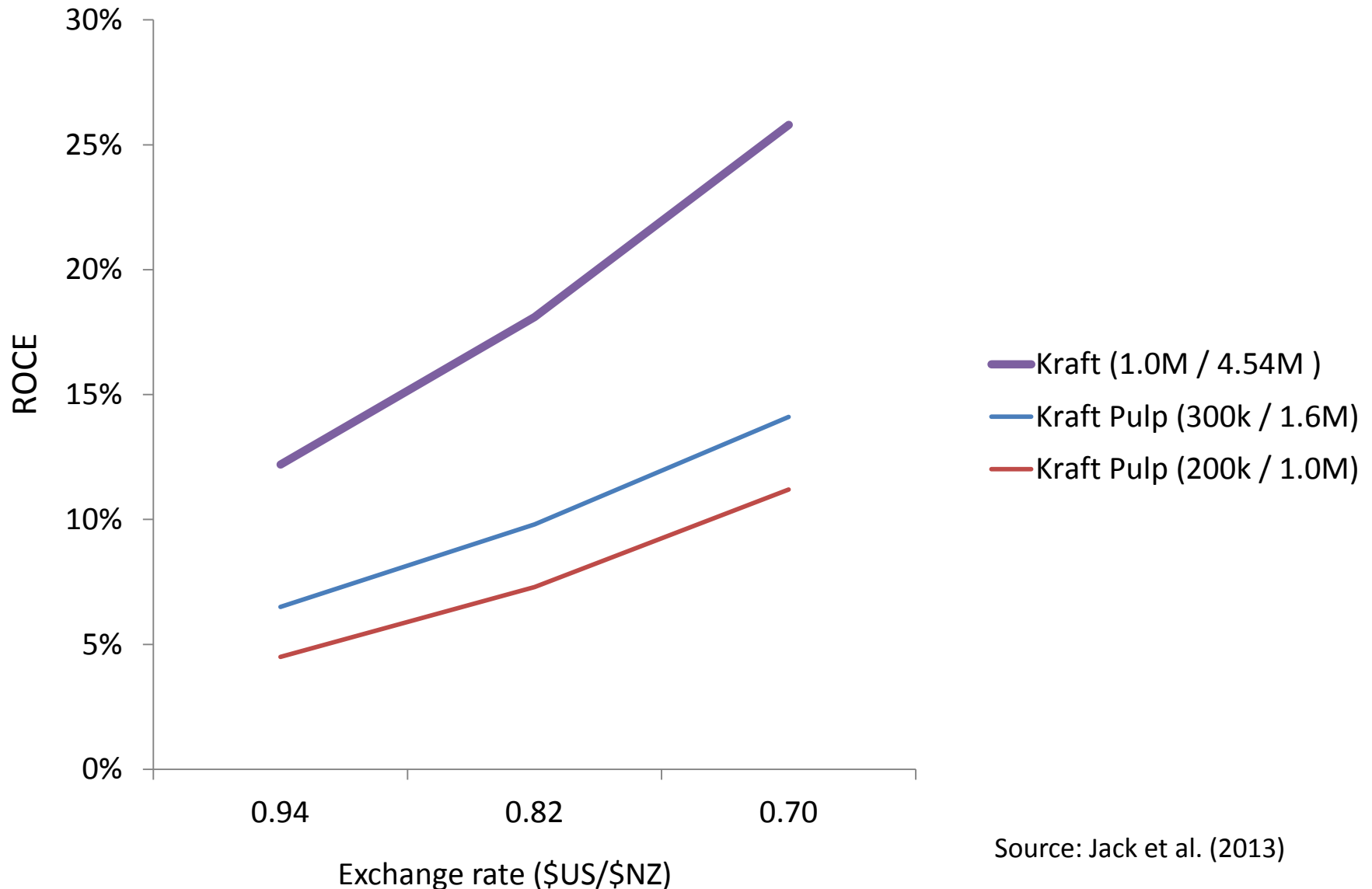
- The economics of markets can start with what products can be manufactured profitably, for an assumed:
 - Production process
 - Price of output
 - Variable and fixed costs of production
 - Resource availability
- This is what the Woodscape study of processing options did
- The results were released in Feb 2013....

Ranking	Description	Return on Capital Employed (%)	Technology Risk
2	Emerging, medium risk		
4	Emerging/traditional		
5	Traditional, very little technology risk		
	Dissolving Pulp (170k / 1.0M)	22.1%	5
	Lignin Polymers / 1.25M	21.0%	2
	Woodforce WFP 0.3M	18.8%	2
	Kraft (1.0M / 4.54M)	18.1%	5
	Plywood 350 K	17.3%	5
	Catalytic pyrolysis - Aquaflow / 700k	16.9%	2
	OSB (750k m3 / 1.25M)	15.8%	5
	Lignin Polymers M / 0.62M	14.7%	2
	Plywood 200k	13.6%	5
	OSB (450k m3 / 765k)	13.1%	5
	Glulam / 9k	13.0%	5
	Catalytic pyrolysis - Aquaflow / 350k	12.3%	2
	Wood Pellets (70k)	12.0%	4
	Cross laminated Timber 35k	11.9%	4
	Thermally modified wood 9.1k	11.9%	4
	CO2 Modified wood 9.5k	11.7%	3
	Acetate via syn-gas / 275k	10.5%	2
	Liner Board (300k / 0.75M)	9.8%	5
	Kraft Pulp (300k / 1.6M)	9.8%	5
	Ethanol via syngas / 275k	8.9%	2
	Fischer-Tropsch Diesel NZ (5.0M)	8.5%	2
	Remanufactured Appearance	7.6%	5

>15%

<15%

Profitability increases with scale, and with a depreciating exchange rate



Woodscape conclusions

- “...A number of...[wood processing]...look attractive for investment, based on their return on capital (>15%) , cash flow and the market opportunity for their products...”
- “...Primary solid wood processing is a vital component of the wood processing sector because many other processing options rely on their residues for their input feedstock. To realise the Woodco strategy and benefit the economy from greater wood processing, New Zealand needs to markedly increase the global competitiveness of sawmilling operations...”

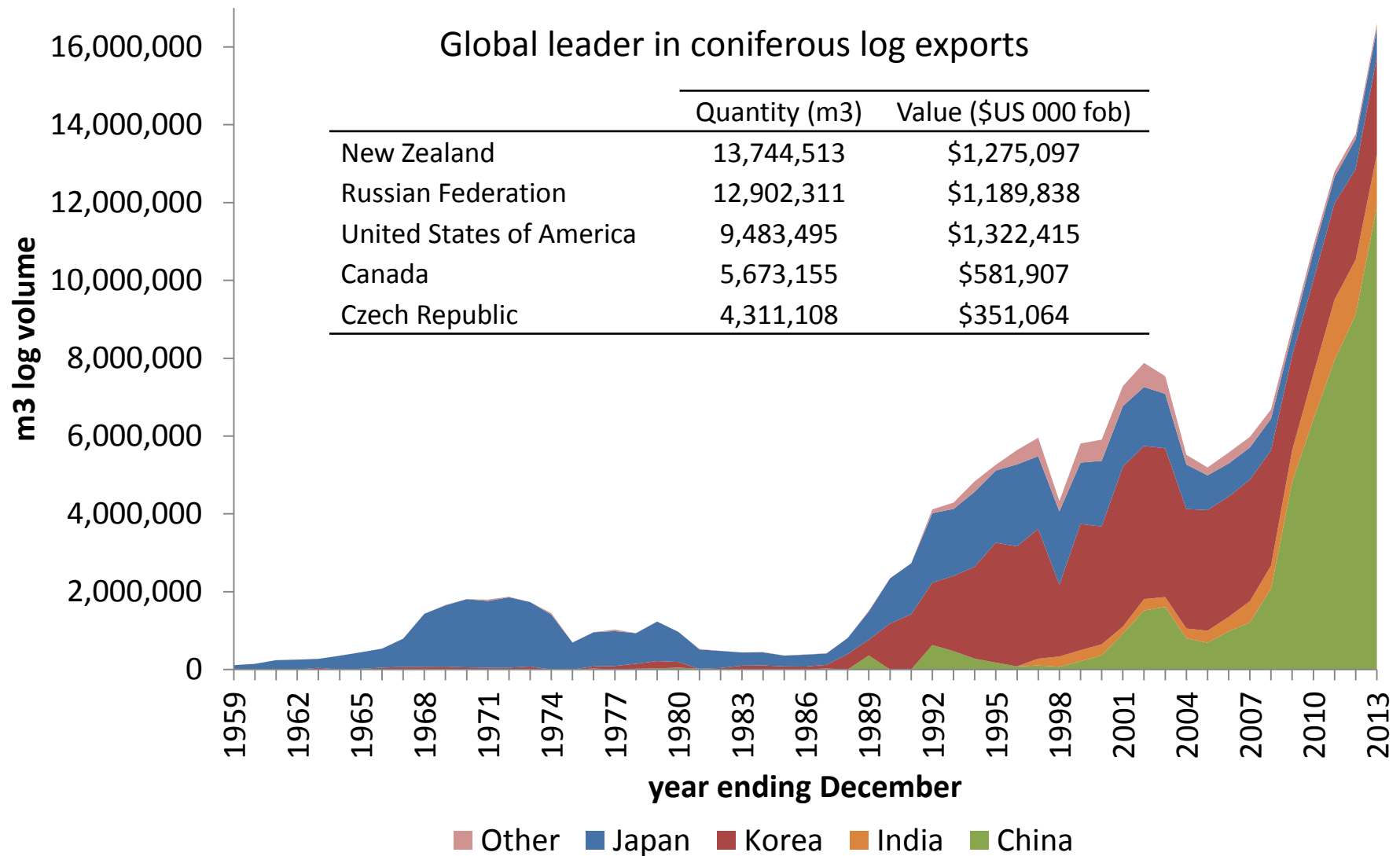
My assumptions

- Niche products should be investigated and developed but are not going to provide the “step change” the Woodco goals outline
- New products and processes should be investigated, but their contribution is likely to be longer term and far more risky
- Neither carbon nor energy are profitable alternatives to developing and increasing the value of wood products (solid wood and fibre based).
- In order to grow the sector to its potential, we need to think about our commodity focus – what product do we focus on getting very good at producing?

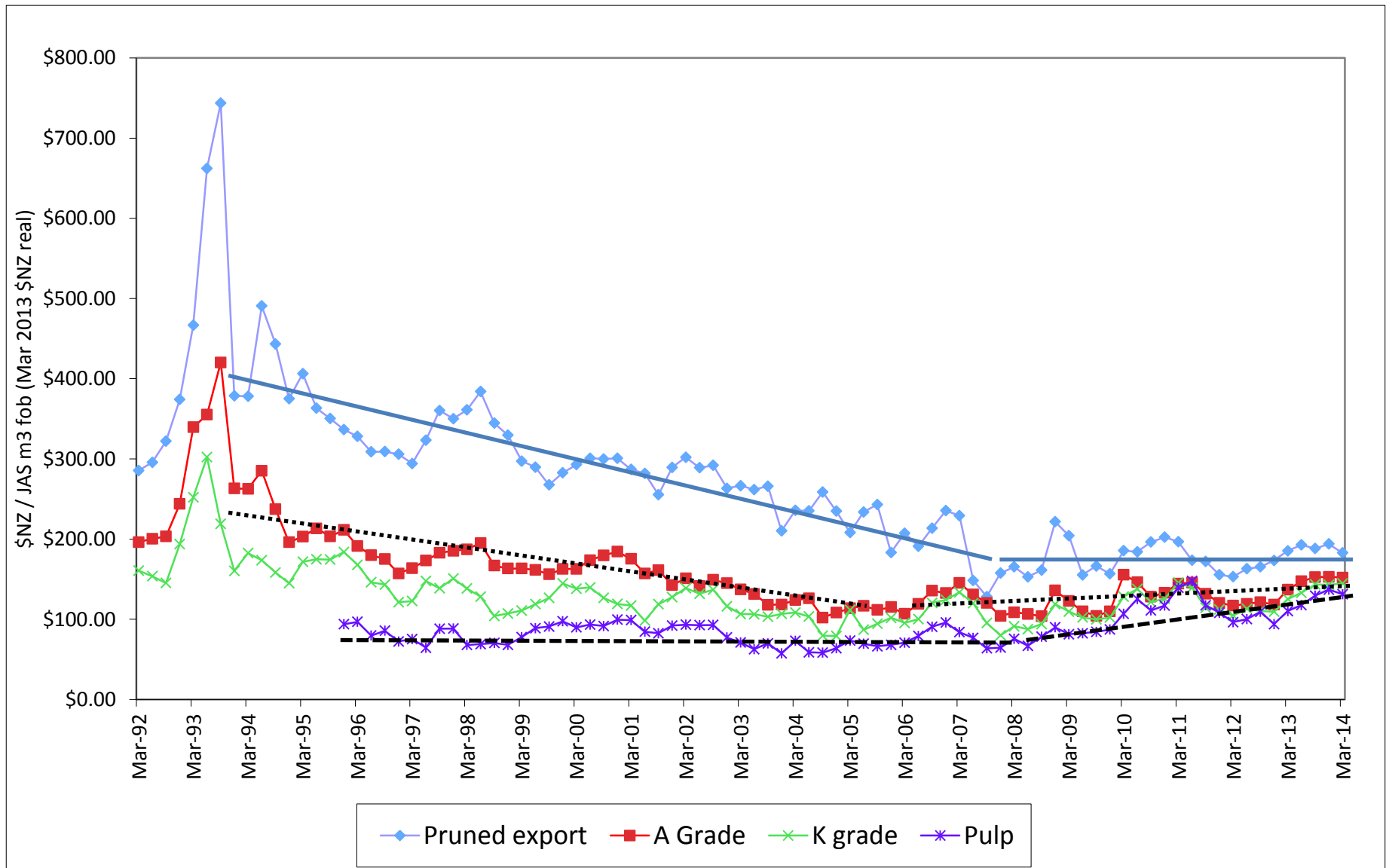
Two choices

- Sell raw material direct to the market
- Process first

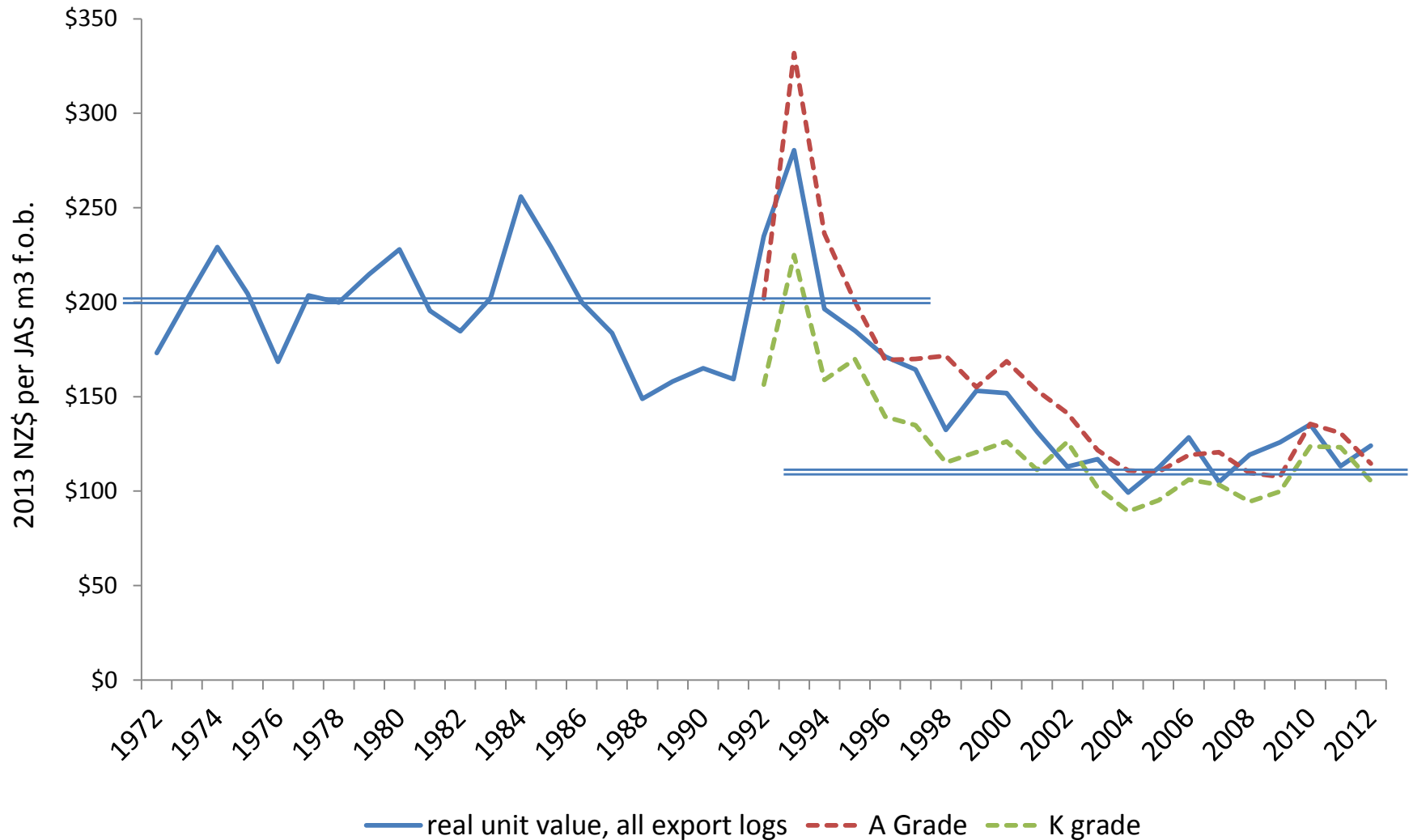
Log exports from New Zealand



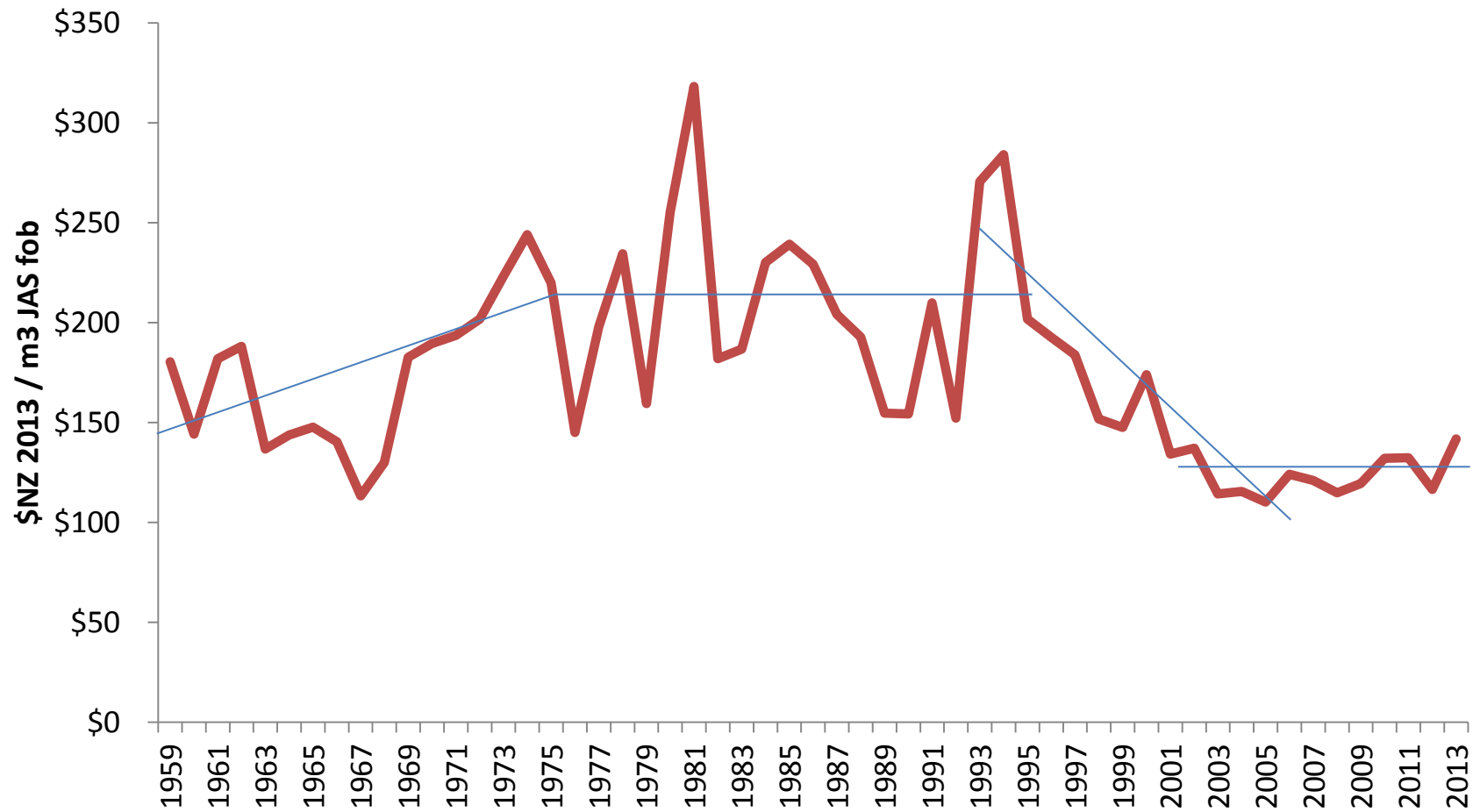
Log price trends (inflation adjusted)



Long term log price trends



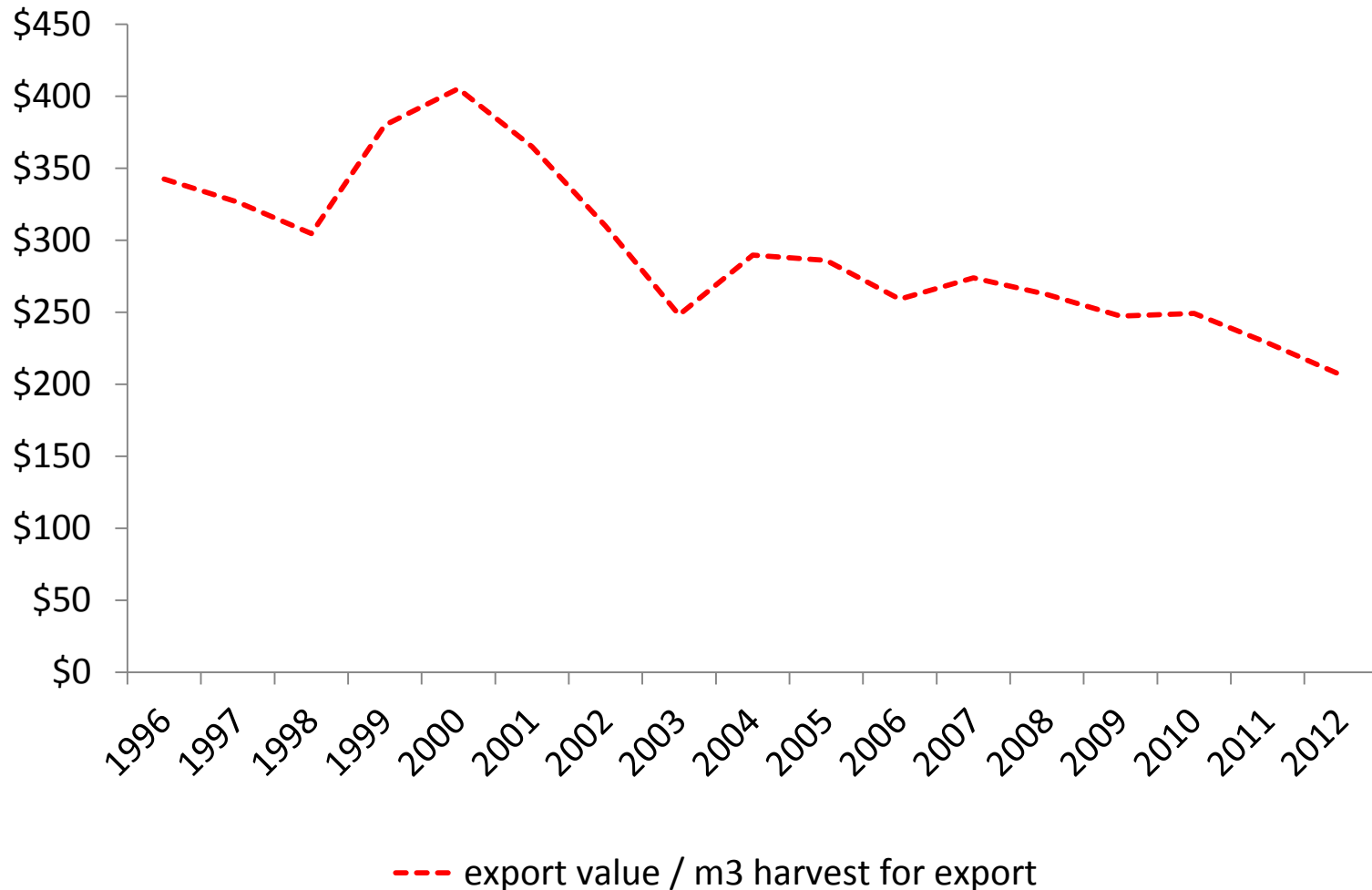
Even longer-term price trends



Log prices are LOW

- Prices are low and expected profitability is such that new investment in forestry (new land planting) is minimal
- The prospects of the dairy industry have improved, and this has increased land prices across the agricultural sector.
- Forestry cannot pay the land price commanded by the next-highest land use (hill country sheep and beef farming).
- We are experiencing land use change from forestry to other alternatives
- Negative LEVs for existing forests lead to cost minimisation by forest growers, cash flow constraints on silviculture. “Running the investment down” is a predictable response to inadequate returns.
- Low prices for higher grade logs have not led investment in the solid wood sector that creates the right scale of residue for fibre processing.

The forest is having to work harder for every \$ of export receipts



Market signals for processed products

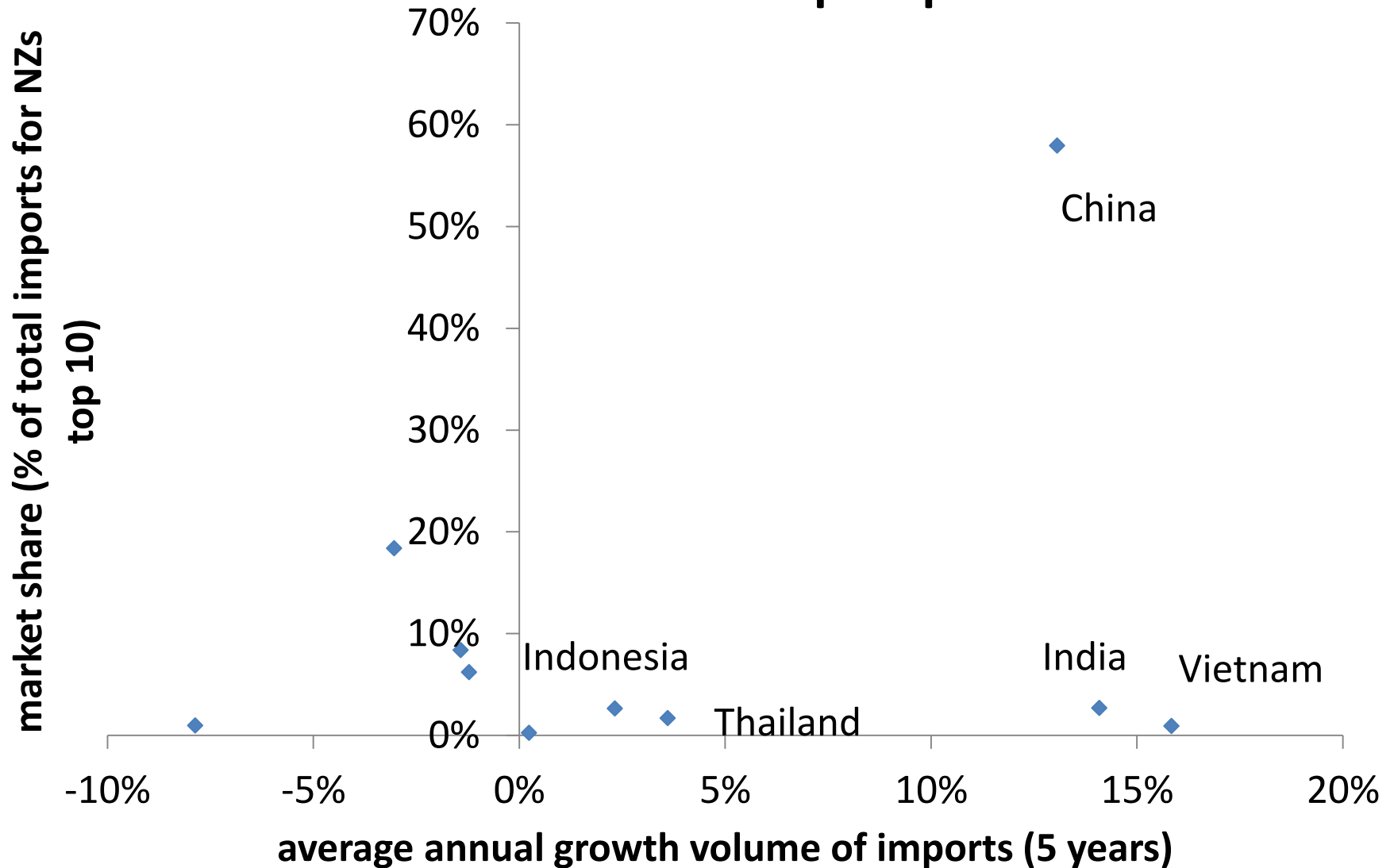
- The profitability analysis pointed us in the direction of some wood based panels, pulp, some niche market opportunities, and some (high risk) new products and processes
- I will now look at New Zealand's top 10 forestry markets, and assess the prospects for the commodity products noted above, and the implications for the feasibility of wood processing in New Zealand

Import market size & growth rate - chemical pulp

	market growth			market share 2012	market size 2012 (tonnes)
	5 years	10 years	20 years		
Australia	-8%	-2%	0%	1%	235,558
China	13%	15%	69%	58%	14,022,757
India	14%	30%	23%	3%	648,940
Indonesia	2%	5%	0%	3%	639,884
Japan	-1%	-2%	-2%	6%	1,499,085
Philippines	0%	0%	-1%	0%	56,803
Republic of Korea	-1%	-1%	2%	8%	2,024,464
Thailand	4%	2%	4%	2%	409,956
United States of America	-3%	-2%	0%	18%	4,446,480
Viet Nam	16%	75%	110%	1%	219,712
TOTAL 10 markets	5%	4%	6%	100%	24,203,639

Source: FAO

Promising import markets – chemical pulp

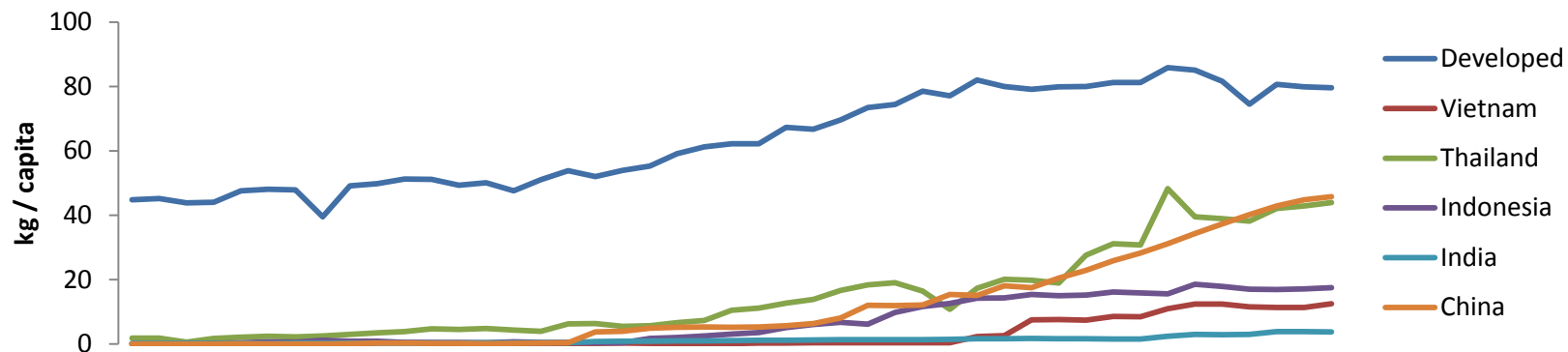


Market prospects

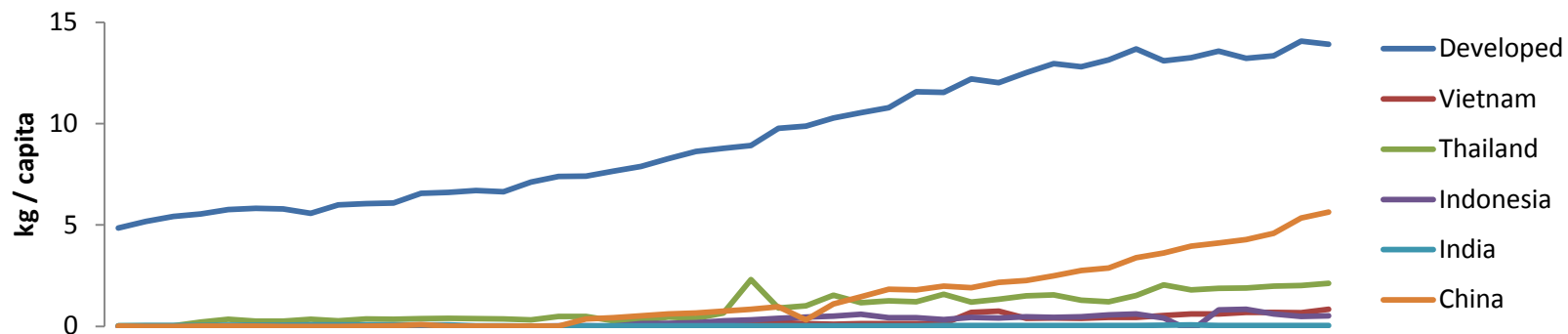
- The past two slides have shown that the pulp market is large and growing quite fast (about 1.25 million tonnes per year)
- However past performance is no guarantee of future performance
- So what can we say about market prospects for pulp?

Market prospects

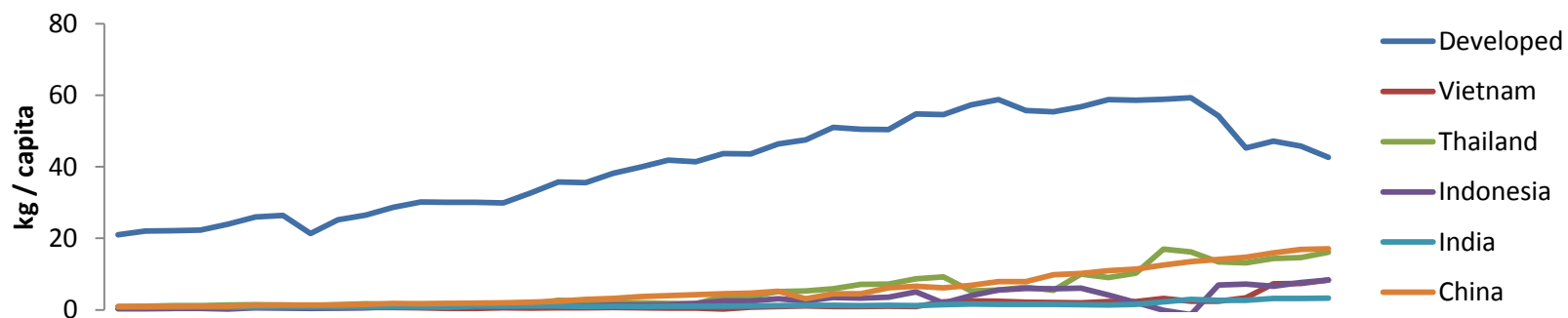
Packaging and wrapping paper and board



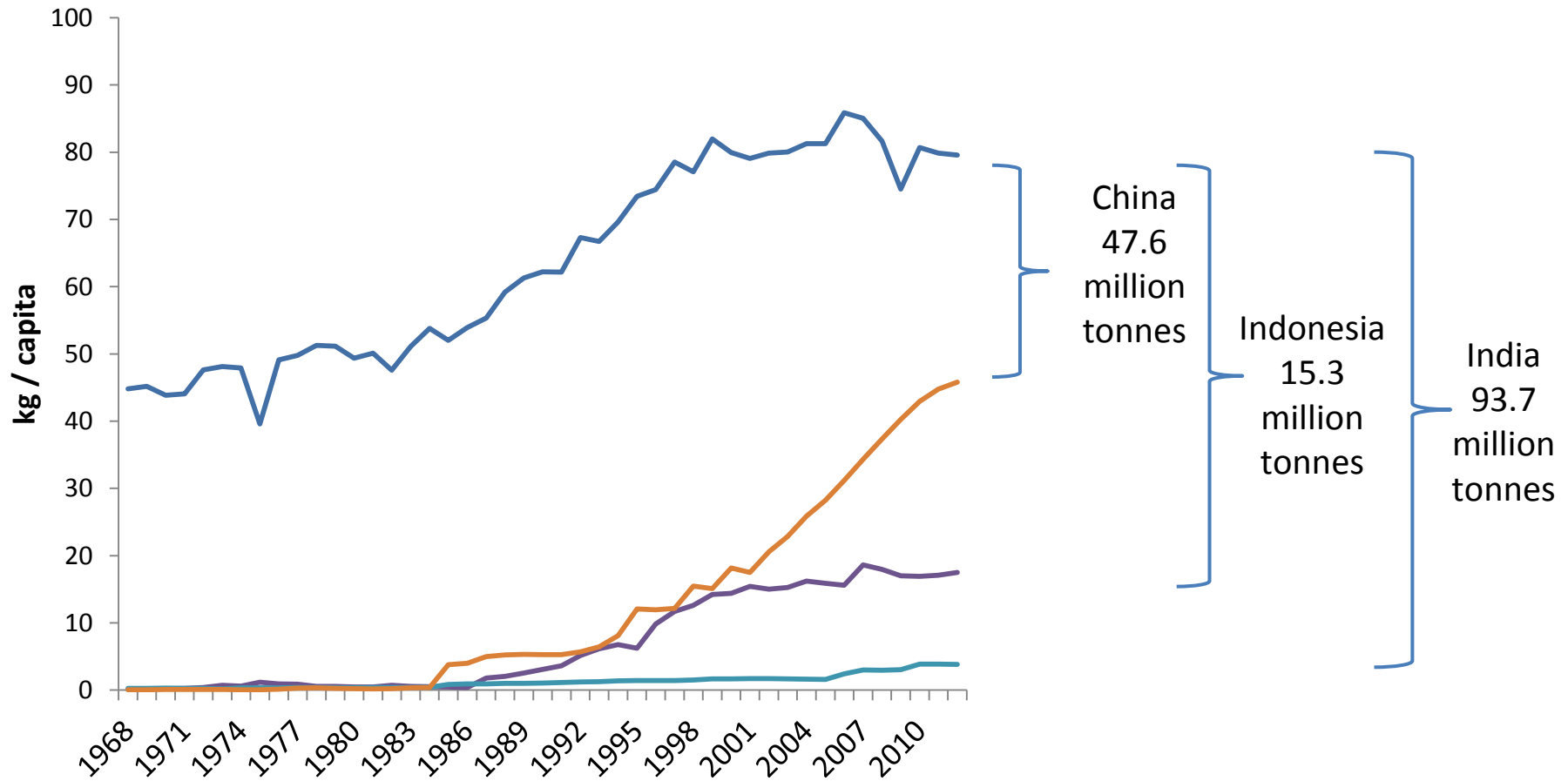
Household and sanitary paper



Printing and writing paper



Indicator of market potential, packaging

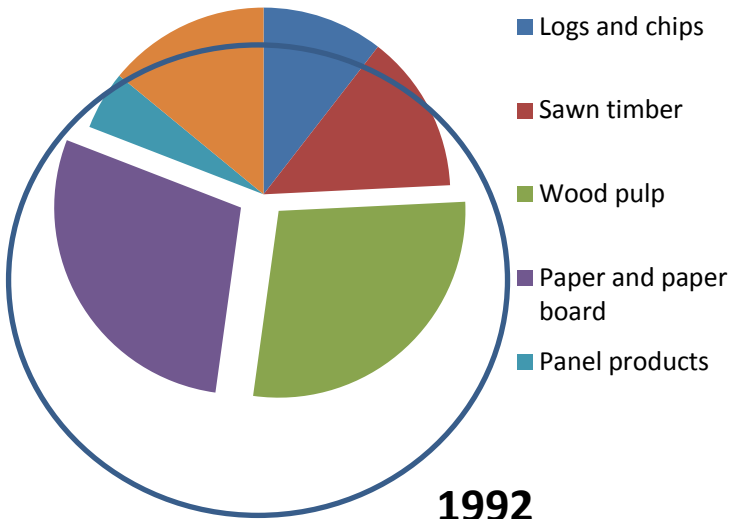


For once, we are in the right place!

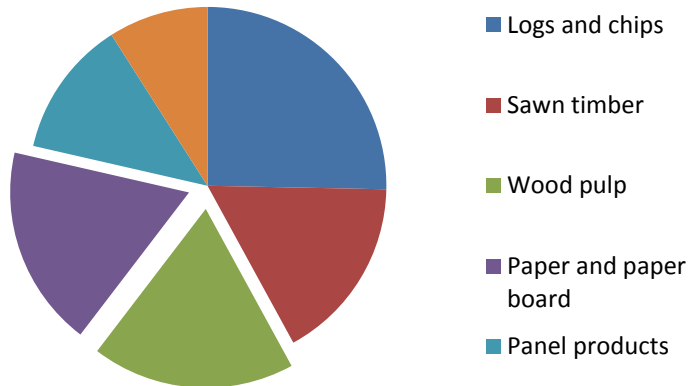
- The growing markets for forestry products are some of our nearest neighbours in Asia
- But is pulp right from a strategic point of view?

Should we contemplate a pulp- based export sector?

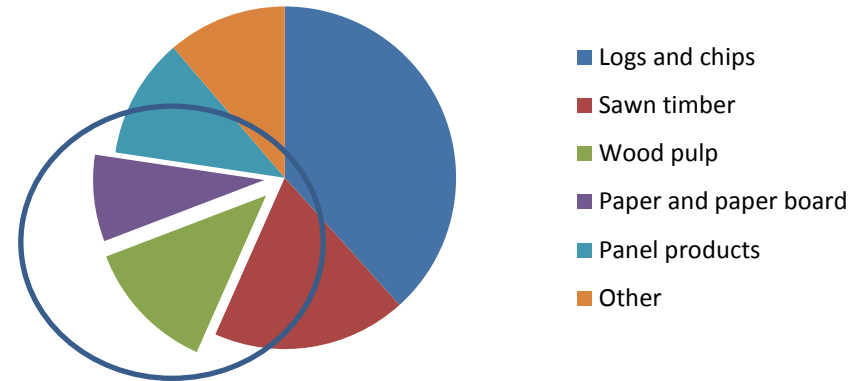
1982



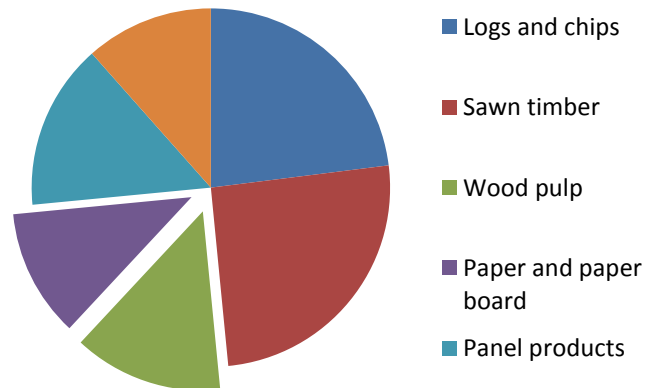
1992



2012

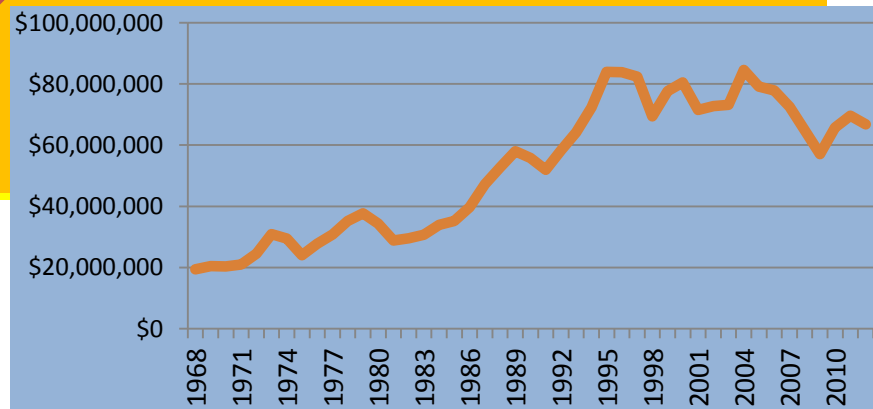
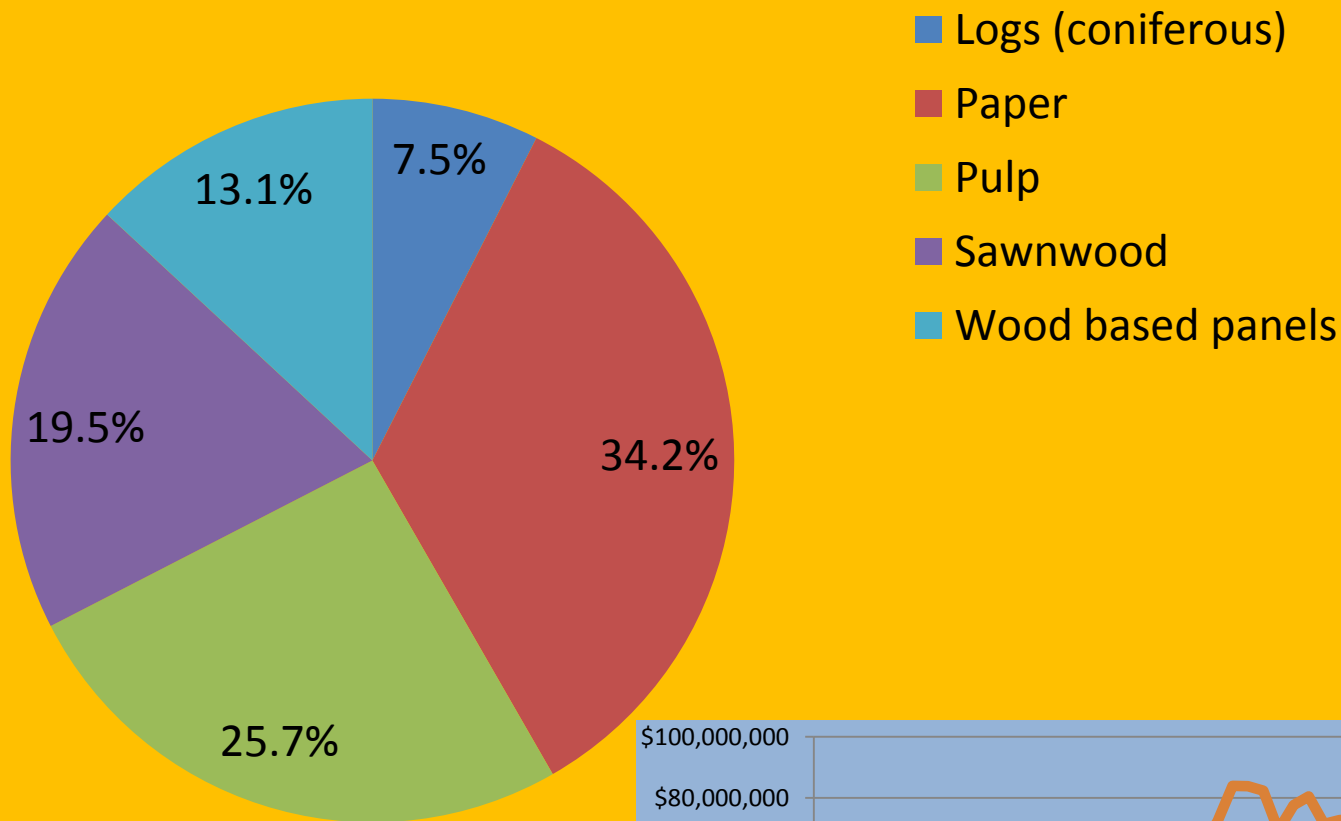


2002

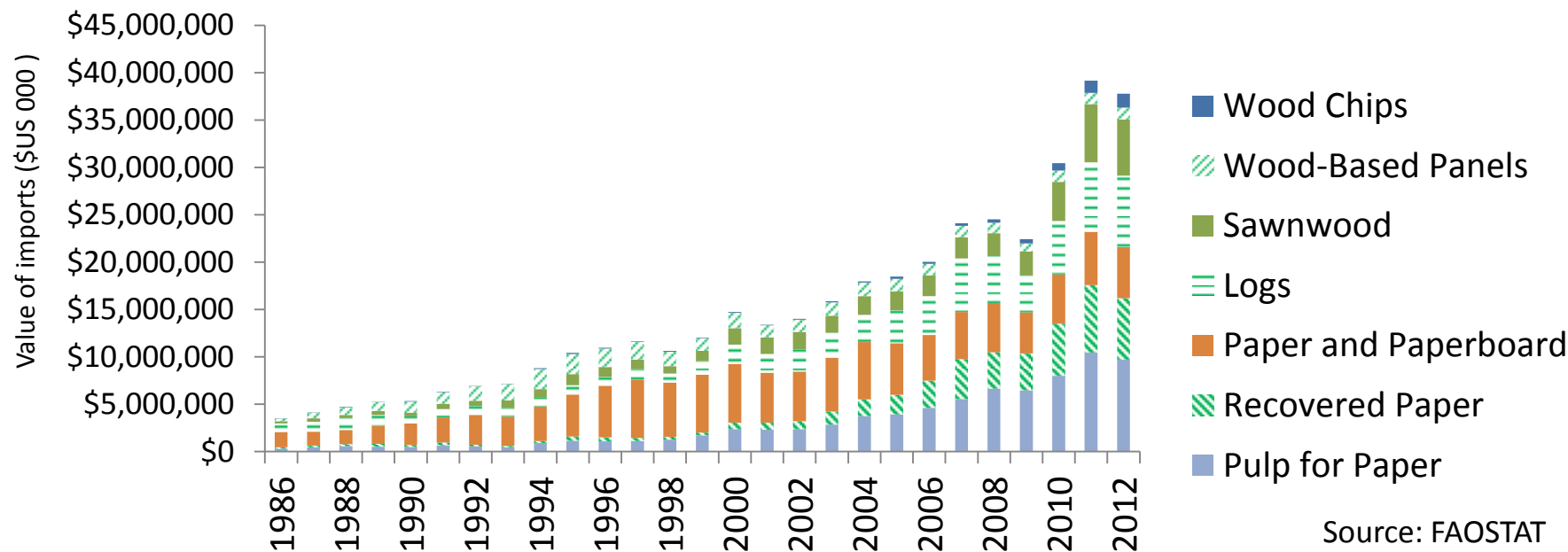
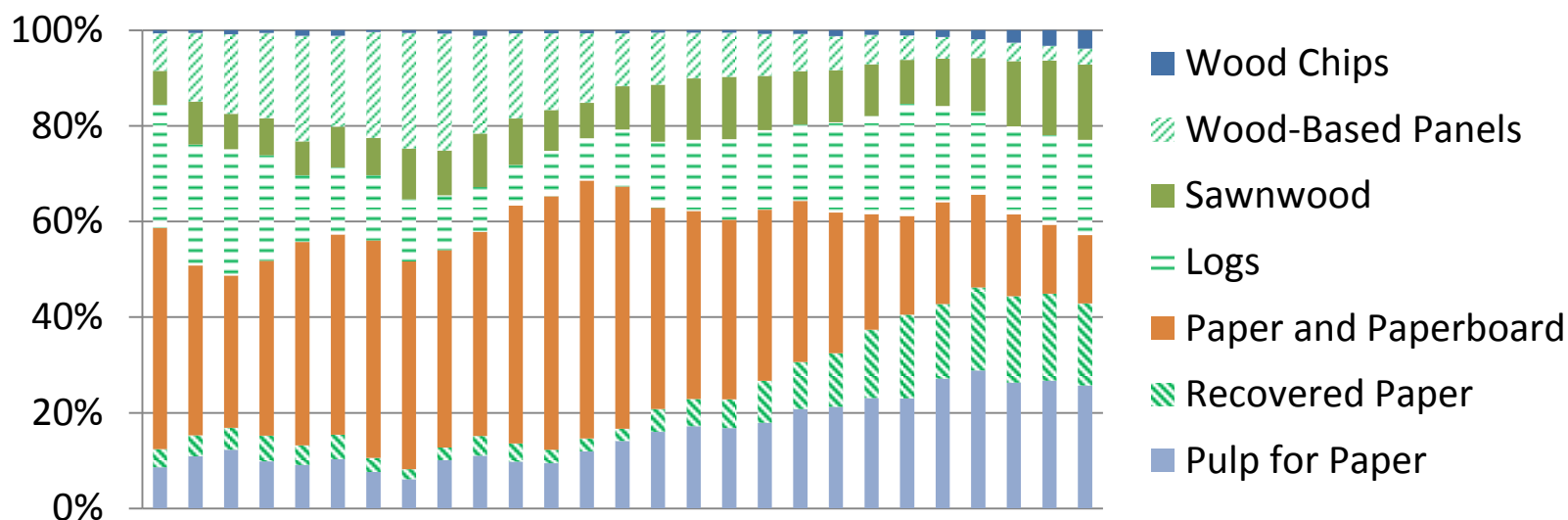


Value of imports, NZ top 10 markets

2011

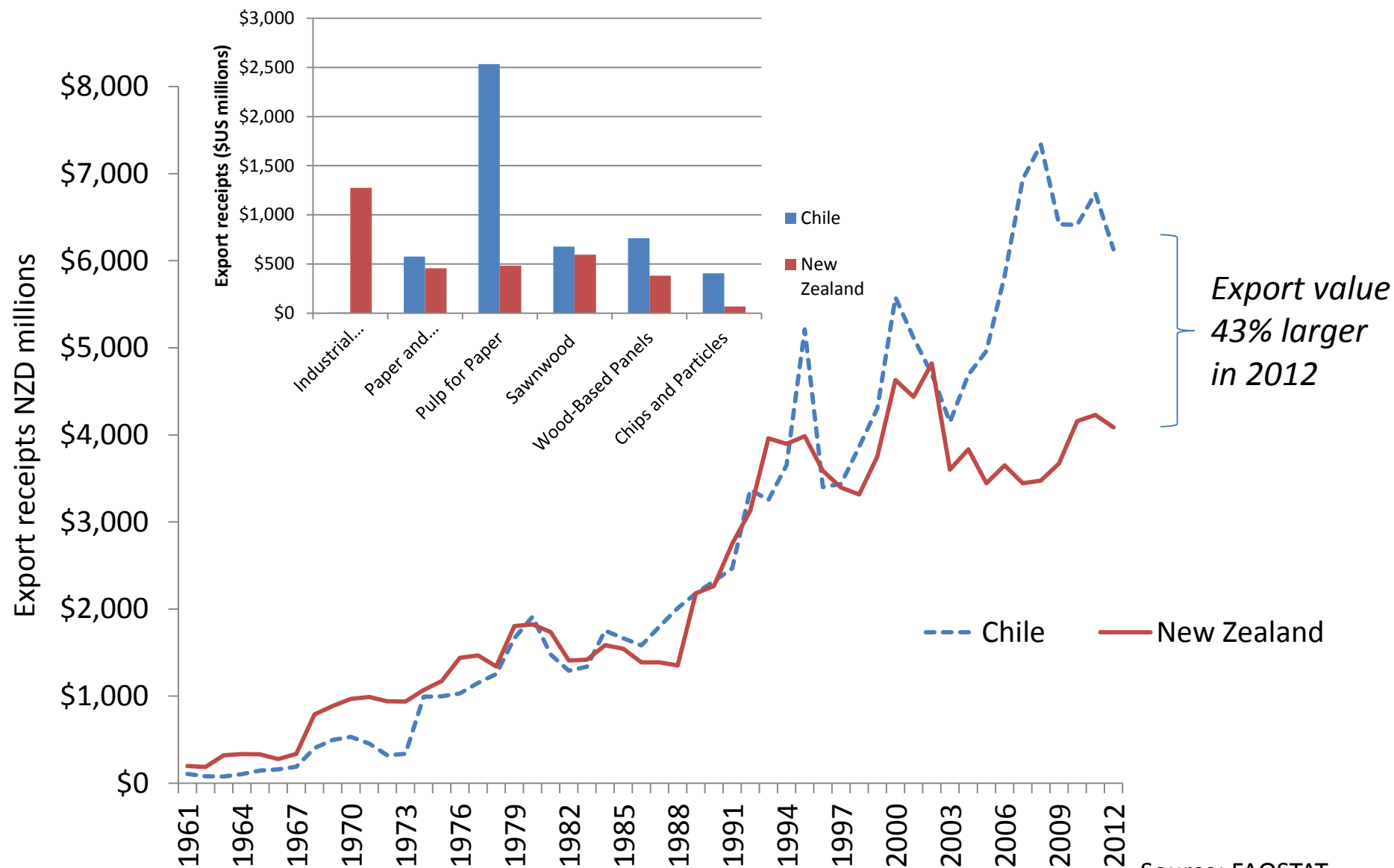


China imports of forestry products



Source: FAOSTAT

Export performance, New Zealand and Chile



Other strategic considerations

- Suitability of radiata pine
 - Packaging (high)
 - Tissue (high)
- Wood is a mix of chemicals and products that we have barely tapped the potential of. A chemical pulp mill is the way to move down that road
- Will increase the energy contribution of the forestry sector
- A commodity focus on pulp does not preclude development of solid wood industries as well

Market prospects, other products

Import market size and growth – coniferous sawnwood

	market growth			market	market size
	5 years	10 years	20 years	share 2012	2012 (m3)
Australia	-2%	-2%	-2%	1%	550,975
China	45%	58%	85%	37%	15,181,208
India	104%	193%	220%	1%	308,000
Indonesia	-9%	0%	188%	0%	111,176
Japan	0%	-2%	-1%	15%	6,289,000
Philippines	17%	-6%	20%	0%	27,095
Republic of Korea	22%	26%	19%	3%	1,200,239
Thailand	12%	10%	12%	1%	305,000
United States of America	-4%	-5%	-2%	40%	16,551,790
Viet Nam	6%	19%	126%	1%	436,000
TOTAL 10 markets	4%	-1%	1%	100%	40,960,483

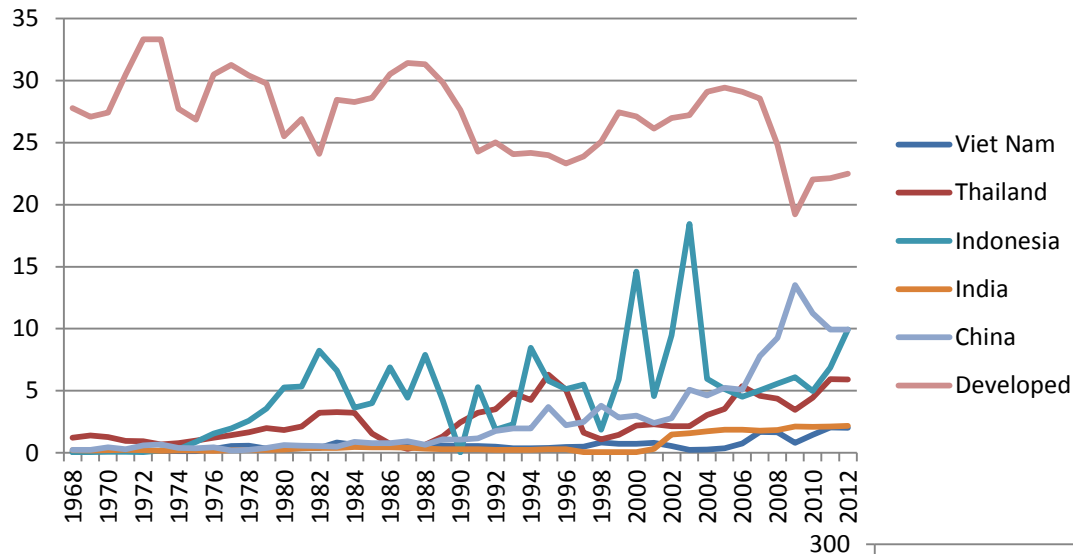
Source: FAO

Import market size and growth – plywood

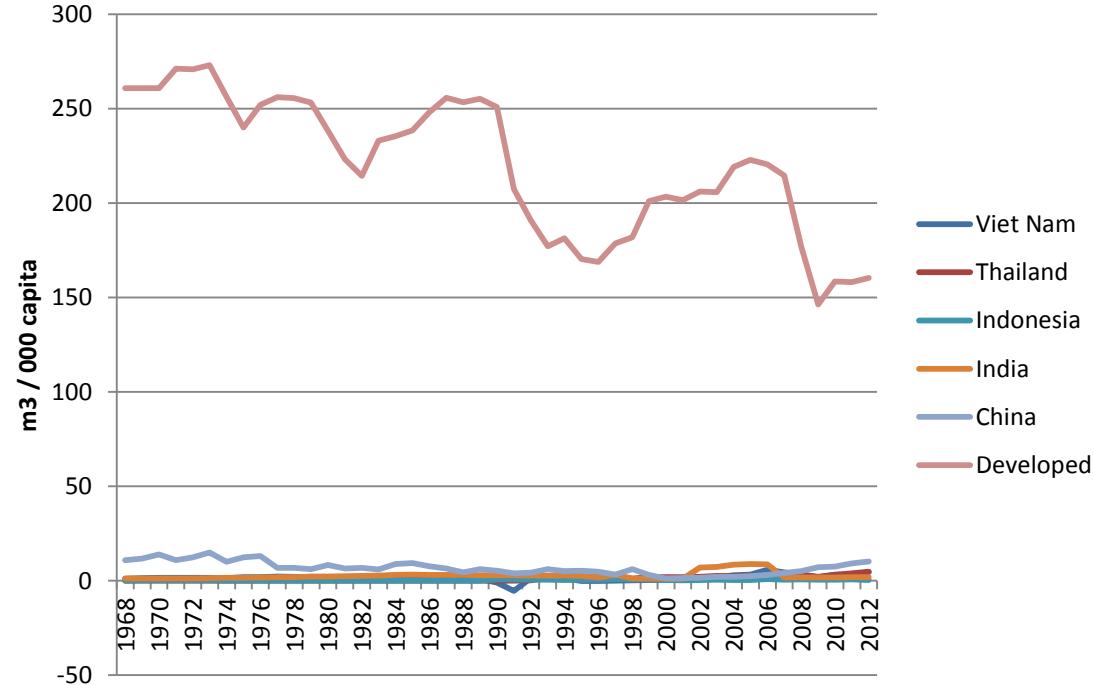
	market growth			market share 2012	market size 2012 (m3)
	5 years	10 years	20 years		
Australia	4%	7%	16%	3%	292,761
China	2%	-2%	-3%	14%	1,497,483
India	30%	64%	168%	2%	180,000
Indonesia	23%	1021%	70%	2%	179,746
Japan	0%	-1%	-1%	35%	3,648,700
Philippines	37%	34%	442%	2%	214,401
Republic of Korea	1%	-3%	-1%	9%	976,000
Thailand	12%	23%	67%	3%	346,222
United States of America	-1%	-3%	4%	27%	2,863,656
Viet Nam	26%	209%	882%	2%	219,000
TOTAL 10 markets	1%	-1%	0%	100%	10,417,969

What does a less hopeful market look like?

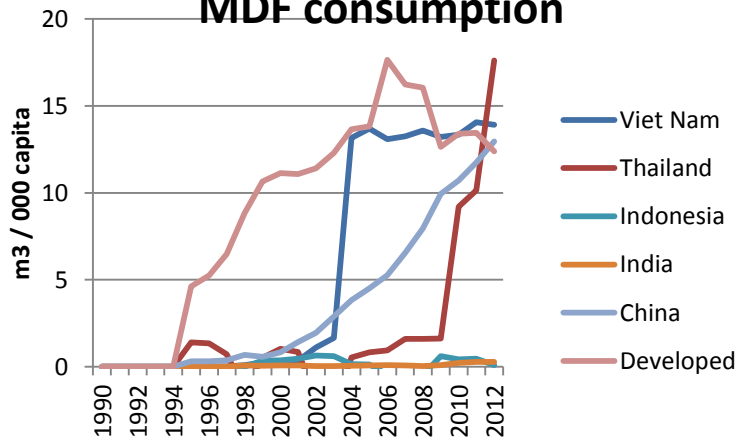
Plywood consumption



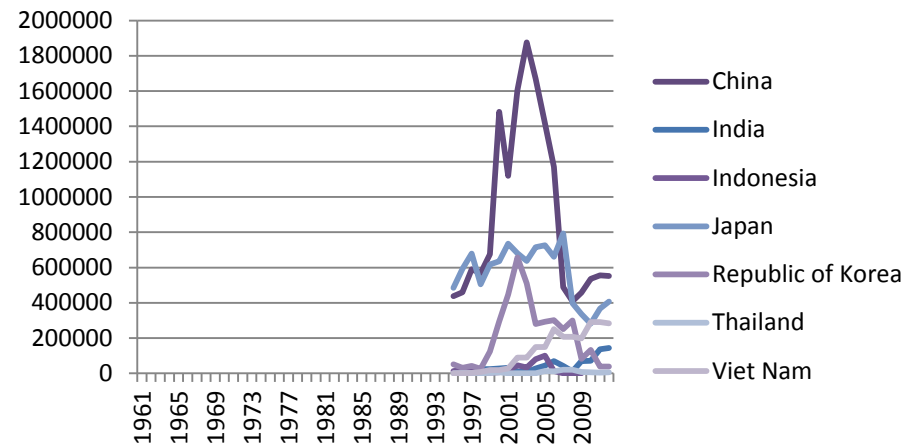
Softwood sawn timber



MDF consumption

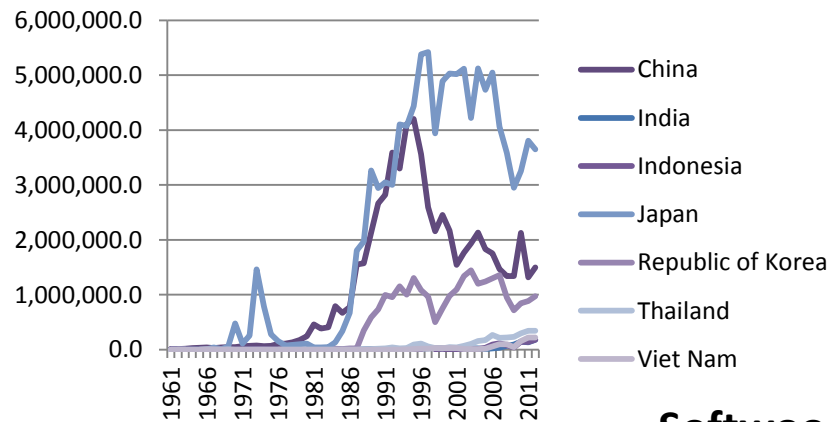


Medium density fibreboard

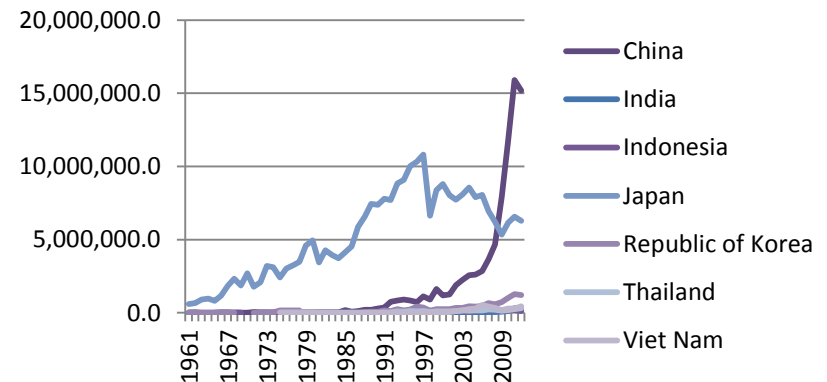


Actual volume of imports

Plywood



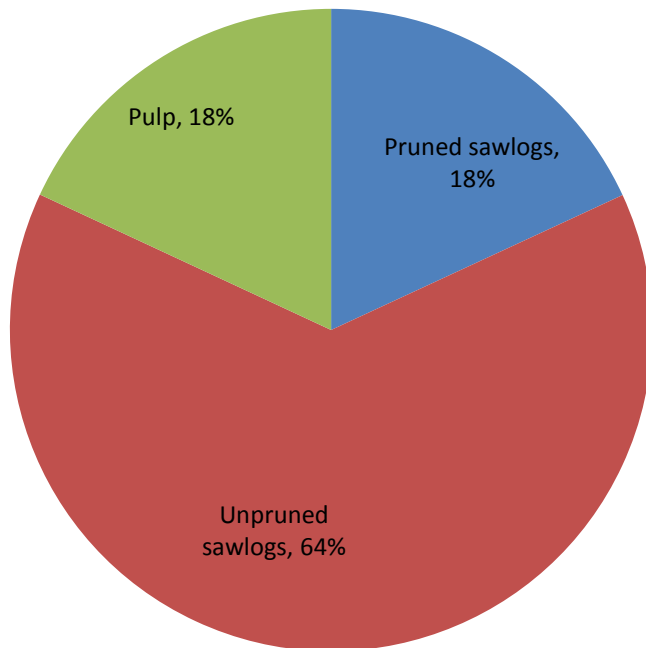
Softwood sawn timber



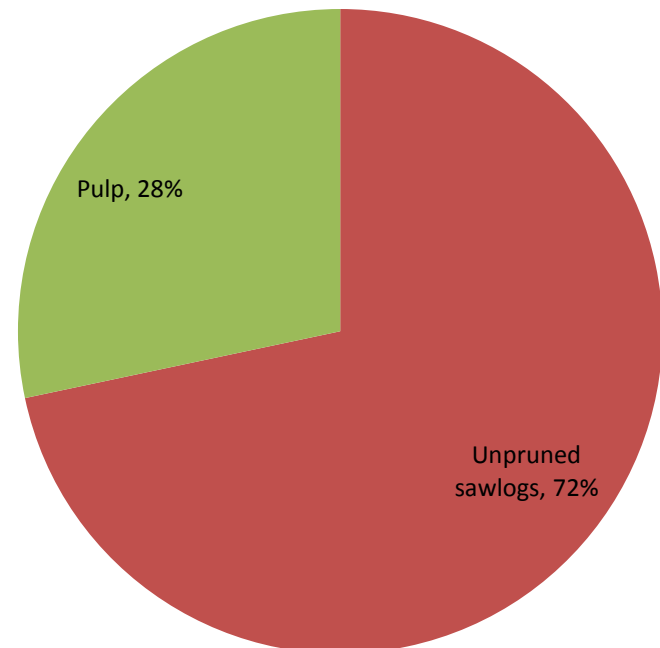
Making it happen

Selling the forest

- Forest outturn from our current regimes:
 - 20% pulp wood, 20% pruned, 60% unpruned sawlogs (RIY) or
 - 70% unpruned and 30% pulp RMY)



TRV = 735 m³/ha at age 30



TRV = 752 m³/ha at age 30

Working together

Forecast out-turn for New Zealand, 2014

	Total	Pruned	Unpruned	Chip
2014	24,195	3,380	15,851	4,964
		14%	66%	21%

From MAF (2010) New Zealand Wood Availability Forecasts 2010-2040

Actual volume (roundwood equivalent) available for pulp and solid wood

Assume 50% sawmill conversion rate

Roundwood

	Fibre (m3)	% of total
Sawn timber	9,616	40%
Pulp	14,580	60%
TOTAL (check)	24,195	

According to the economics of markets we should look seriously at ...

<p>FOREST</p> <p>Total harvest 7.5 million m³</p> <p>300,000 ha</p> <p>Investment \$3 billion</p> <p>Return 7%</p>	
<p>PULP MILL</p> <p>Fibre input 4.5 million tonnes</p> <p>Pulp output 1 million tonnes</p> <p>Investment \$2 billion</p> <p>Return 15%</p>	<p>SOLID WOOD PROCESSING</p> <p>Fibre input 5.8 million</p> <p>Solid wood output 2.9 million m³</p> <p>Investment \$500 million</p> <p>Return 5%</p>

Why the Woodscape study?

- An earlier Woodco Strategy study said

“...Lack of scale and current levels of productivity are significant barriers to investment in the wood processing industry. An economic analysis of wood processing and value-adding in New Zealand needs to be undertaken, along with a realistic look at what forms of new processing and expansion of existing plants would feasibly work...”

Conclusions

- There is a large and growing market for chemical pulp in our region (New Zealand's existing markets)
- The demand is tied to consumer products that have increasing demand with increasing wealth, and there appears to be a lot of future growth
- 22 years of waiting for the solid wood sector to become vibrant and internationally competitive has not yielded the desired result. Declining log prices have not encouraged investment
- We need to figure out how to start expansion with pulp as the driver. Need to be able to think of overall profitability of the sector

The economics of markets indicate

- Future expansion of the forestry sector depends on a commitment to invest in large scale pulp capacity
- Expansion of the solid wood industries will occur as a consequence of that, not as a precursor
- The pulp option is
 - implied by the goals outlined by Woodco
 - supported by profitability studies,
 - and indicated past market performance and assessment of future potential
 - strategically sound

Conclusions

- IF we set stretch goals, and then do nothing, the sector will gain (or maybe reinforce) a reputation as a chronic under-achiever.
- We must define the next steps and make it happen
- The consequences of not taking action and stimulating new investment in the sector, are a continuing decline in the sector's importance to the economy, loss of investment opportunities and reduction in scale.
- The time for action is NOW



Thank you...